REMARKS

Examiner Chan is thanked for the courtesies extended during a telephone interview conducted on December 18, 2009. During the interview, the claims and the prior art rejection were discussed. In particular, the Examiner explained his position with respect to Nuemiller based on col. 7, lines 50-67. The Examiner explained that Nuemiller uses SNR--a signal strength--to determine what modulation method to use and saves that modulation for the associated route stored in a table. The Examiner analogized the claimed multiple threshold comparison to Nuemiller's maintaining a collection of routes based on channel modulation methods, such as QPSK or QAM-16 which have different bit error rates, which are related to the signal-to-noise ratio (SNR) of the channel/route.

The Examiner suggested amending the claims to limit signal strength to SNR and to recite a specific criterion by which nodes listed in the table were initially entered in the table. The specific suggestion offered by the Examiner was to include in the claim that a certain group of nodes met a special SNR requirement. The independent claims are amended to adopt the Examiner's suggestions in an effort to move the application to allowance. Example support may be found on page 6, line 14-page 7, line 8 of the application as filed. Claims 7 and 8 are canceled as a result of these amendments.

At the end of the interview, the undersigned asked the Examiner to identify where the applied references described the two threshold comparison process described in claim 1. The Examiner responded that although he might not have the exact claim wording in the references, he believed that using two different thresholds was "known in many different contexts and would

be obvious to use in Nuemiller." Applicants disagree with this position for the reasons set forth in the pre-appeal brief and below.

Claims 1-8 remain rejected under 35 U.S.C. §103 based on Nuemiller, Liu, and Balogh. This rejection is respectfully traversed.

The technology in claims 1 and 4 relates to WLAN ad hoc networks. A first node maintains in a list a group of current "good neighbor" nodes within the ad hoc network which can be used for forwarding messages within that network. Rather than listing weak "bad neighbor" nodes which are not desirable forwarding candidates, the first node lists good neighbor node members in its ad hoc network routing table so that packets from the first node are routed to one or more good neighbor nodes, each good neighbor node in turn having its own list of good neighbor nodes, and so forth. In addition to listing strong candidates rather than weak candidates, the signal-to-noise ratio (SNR) of signals from member nodes in the good neighbor list are analyzed differently from the signal-to-noise ratio (SNR) associated with non-member nodes not on the good neighbor routing node list. The signal-to-noise ratio (SNR) for a good member node is allowed to vary somewhat within a predetermined range above a first threshold value to accommodate normal fluctuations associated with a moving node. But if the signal-to-noise ratio (SNR) of the good member node falls below the first threshold level, then that node is no longer considered to be a good neighbor and is removed from the list. In contrast, the signal-to-noise ratio (SNR) of an unlisted node who is not a member of the good neighbor group must exceed a second higher threshold level in order for that unlisted node to be added as a member of the good neighbor group and to the table. This arrangement provides a robust system where the list of good neighbor group nodes in the ad hoc routing table is updated based on changing channel conditions to ensure good signal quality routing connections.

Nuemiller describes various nodes flooding each other with broadcast routing table information that is only used if another nearby node is with radio range of the broadcasting node. The Examiner relies on col. 7, lines 55-65 as allegedly teaching "if the second node is already listed in the table maintained by the first node." That text at col. 7, lines 55-65 is quoted here for convenience:

> Overall, a mobile terminal 102 in an ad-hoc network 100 will usually maintain a collection of routes to any given host, so that if one route is lost the other routes can be used. The embodiments of present invention take advantage of this knowledge in a pro-active manner. Commonly used channel modulation methods such as QPSK or QAM-16 have bit error rates that are directly related to the signal-to-noise ratio of the channel being used. Typical measurements in CDMA networks show high speed mobiles will often experience 10^{-2} BERs. With reference to FIG. 6B, applying macroscopic selection and diversity, for example, three independent 10^{-2} links can be combined to form a 10^{-6} BER link.

A table/collection of multiple routes to any given host is not the same as actually determining if a second node is already listed in the table maintained by the first node. There is no decision in Nuemiller about whether to include or discard a node from the routing table dependig on whether that node is "a member of a good neighbor group of nodes having met a predetermined signal-to-noise ratio (SNR) requirement and is already listed in the table maintained by the first node," as recited in claim 1. Nuemiller signals are either in range and received or they are not. The actual signal-to-noise ratio (SNR) of a received signal from a neighbor node is not a concern in Nuemiller with respect to determining whether a node is "a member of a good neighbor group of nodes." At best, Nuemiller would use SNR information to choose an appropriate channel modulation technique, e.g., a high SNR might indicate a higher performance modulation technique like QAM-16 and a lower SNR might indicate a more robust

modulation technique like QPSK. That a different channel modulation method may be chosen depending on an SNR of the channel being used is not related to what is claimed.

The Examiner admits that Nuemiller lacks the claimed first and second predetermined signal-to-noise ratio (SNR) threshold comparisons and turns to Liu. Liu maintains network configuration hierarchy information, establishes routes, and transfers information between nodes in ad-hoc data communication networks with on-demand multicast and unicast techniques using controlled flooding. Figure 4 shows adding a new neighbor sender to a new neighbor list. Liu compares the value of a beacon status message counter to a threshold value, and depending on the result, the counter continues to count or a node processor determines that new neighbors may have been discovered or that a neighbor set has changed. See col. 14, lines 47-62. But the message count threshold comparison in Liu is not comparing signal-to-noise ratios (SNRs) with first and second signal-to-noise ratio (SNR) thresholds. Nor is the message count comparison used to decide how to differently handle nodes already listed as good neighbors in a good neighbor group of nodes table and nodes not listed in that table.

Balogh does not remedy the deficiencies in Nuemiller and Liu. Balogh describes selecting a first access point that has "the same network name as the currently serving access point" and a second access point with "a different network name." The "connection attributes" of the first and second access points are compared, and signal level is one connection attribute. Neither the final rejection nor the advisory action identify what specifically in Balogh corresponds to the claimed first and second predetermined signal-to-noise ratio (SNR) thresholds.

The office action contends that Balogh describes determining if the second node is already listed in a table in the first node, referring to [0007]-[0009] and [0035]. None of these

paragraphs discloses a table or determining if a second node is already listed in a table. Rather, they describe trying to keep a roaming mobile terminal in "the same network as long as possible" [0007]-[0009] and a mobile terminal scanning access points and other mobile terminals [0035].

The Examiner argues that the claimed table corresponds to "deciding which access point to use in order to access a network." A person of ordinary skill in the art would not reasonably equate these two different things. The claimed table is a list of nodes that can be used for forwarding messages in a network. Balogh's terminal is simply trying to find the best access point to access the network.

Balogh discusses signal strength comparison in [0010]: "Yet in one embodiment of the invention, the connection attributes are determined based on signal levels of available access points. The first and the second access point having the highest signal levels are selected. The signal levels of the first and the second access point are compared and it is checked if the difference of signal levels of the first access point and the second access point is above the pre-determined signal level limit." Accordingly, it is that difference between two signals that is compared to the limit to select the closest access point. In contrast, it is the signal-to-noise ratio (SNR) of just one signal, the first signal, that is compared to one of two different signal-to-noise ratio (SNR) thresholds depending on whether or not the second node is a member of a good neighbor group of nodes having met a predetermined signal-to-noise ratio (SNR) requirement and is already listed in the table maintained by the first node. This claim feature is not in Balogh. Performing one relative comparison where the signal strengths of a first access point signal and a second access point signal are compared to each other, as in Balogh, is not the same as performing two separate and different comparisons using two different thresholds, as claimed.

The Examiner also identifies paragraph [0050] and the "second access point with better connection attributes" in Balogh as allegedly teaching "if the second node is not listed in the table maintained by the first node, comparing the signal strength of the first signal to a second predetermined signal strength threshold greater than the first predetermined signal strength threshold." Understandably, the Examiner makes no attempt to map any teaching in Balogh to the following claim feature "if the signal-to-noise ratio (SNR) of the first signal exceeds the second predetermined signal-to-noise ratio (SNR) threshold, adding the second node to the table so that the second node is included as a new member in the good neighbor group of nodes" because Balogh does not teach it.

The Examiner is urged to review paragraph [0050] again describing a user interface which allows a user to accept a new connection. There is no teaching in [0050] of any predetermined threshold comparison levels, let alone of the two separate comparisons to the first and second predetermined signal-to-noise ratio (SNR) thresholds depending on the node's status as a member in the good neighbor group of nodes.

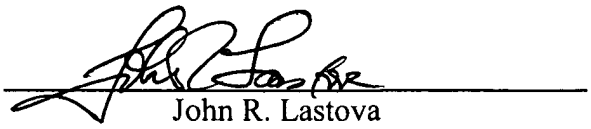
Ultimately, none of the three applied references teaches or suggests performing two separate and different comparisons using two different thresholds depending on whether or not the second node is a member of a good neighbor group of nodes having met a predetermined signal-to-noise ratio (SNR) requirement and is already listed in the table maintained by the first node.

The application is in condition for allowance. An early notice to that effect is respectfully requested. If the Examiner elects to maintain the rejection, Applicants would welcome further explanation of how the Examiner is interpreting the claims and how the

Examiner is reading specific claim features onto specific teachings in the applied references to clarify issues for appeal.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 
John R. Lastova
Reg. No. 33,149

JRL:maa
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100